

REMARKS

Independent claim 1 has been amended to incorporate the limitations of claim 2, and now specifies that the second resin is smaller in a thermal expansion coefficient than the first resin. Independent claim 7 has been similarly amended. The dependency of claim 3 has been amended to depend on claim 1, and a new claim 20 has been added to further scope the invention. No new matter has been entered.

The indicated allowability, over the art, of claim 5 is noted, with thanks. However, it is believed that all of the presently pending claims are now allowable over the art.

Considering first the rejection of claims 1, 4 and 6 as anticipated by Attarwala, as noted supra, claim 1 has been amended to incorporate the limitations of claim 2. Since the Examiner acknowledges that Attarwala does not teach claim 2, claim 1 and claims 4 and 6 which depend directly or indirectly on claim 1 cannot be said to be anticipated by Attarwala.

Turning to the rejection of claims 1-4, 6-9, 16 and 17 as obvious from Caletka, as noted supra, claim 1 has been amended to incorporate the limitations of claim 2, which has been cancelled. It is submitted that neither independent claim 1 nor independent claim 7 or any of the claims dependent thereon can be said to be obvious from Caletka. In the Action, the Examiner alleges Caletka teaches in Figs. 4 and 5 that an underfill material (17) fills a gap between a chip (12) and a laminate substrate (16), an outer portion of a body (26) surrounds an chip (12), an inner portion of the body (26) fills a space between the chip (12) and the outer portion of the body (26), and that the body (26) is smaller in a thermal expansion coefficient than the underfill material (17).

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The present invention is directed to balancing or selecting thermal expansion coefficients of resins in order to reduce warpage in a semiconductor package. In contrast, Caletka only teaches appropriate ranges of a thickness, a thermal expansion coefficient, and a modulus of the thermally conductive member (22), which corresponds to a lid of the present invention, in order to maintain package flatness. However, there is a shortcoming in Caletka that the package thickness becomes thicker. Caletka nowhere discusses the significance of the thermal expansion coefficient of resins. Therefore, it is unobvious to one of ordinary skill in the art to use a second resin that is smaller in a thermal expansion coefficient than a first resin.

Caletka neither teaches nor suggests the significant feature of the present invention. Rather, Caletka suggests that the body (26) should be larger in the thermal expansion coefficient than the underfill material (17), as discussed below.

Caletka teaches in column 4, lines 48-57 that an underfill material (17) is typically a filled epoxy and a suitable filled epoxy is HYSOL 4511 from Dexter Corporation. Although Caletka teaches neither the composition nor the thermal expansion coefficient of HYSOL 4511, another reference (Carden, US 6,224,711 B1), which the Examiner cited in the Office Action issued on Oct. 17, 2005 against the present invention, teaches that HYSOL 4511 is a glass filled epoxy (See column 3 line 65 to column 4 line 16). That is, HYSOL 4511 is such an epoxy resin that is mixed with silica filler.

On the other hand, Caletka teaches in column 4, lines 58-64 that a suitable material of the body (26) is an epoxy commercially available as Masterbond Supreme 10AOHT from Masterbond Corporation. Although Caletka teaches neither the composition nor the thermal expansion coefficient of Supreme 10AOHT, it is disclosed that Supreme 10AOHT is one

component epoxy in a catalogue on a web-site of Masterbond Corporation (See the attached Appendix A). That means Supreme 10AOHT does not contain filler such as glass.

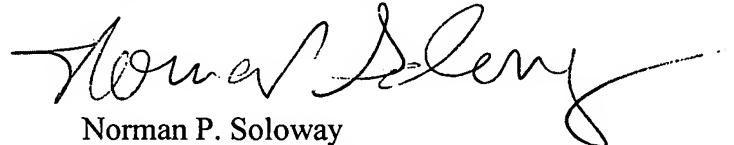
The underfill material (17) composed of HYSOL 4511 in Caletka corresponds to a first resin in the present claimed invention, and the body (26) composed of Supreme 10AOHT in Caletka corresponds to a second resin in the present claimed invention. As described in the specification of the present invention, in order to reduce the thermal expansion coefficient of a resin, silica filler or the like is mixed generally. Therefore, Caletka suggests that the body (26) composed of Supreme 10AOHT would be larger in the thermal expansion coefficient than the underfill material (17) composed of HYSOL 4511. This relationship of thermal expansion coefficient between the body (26) and underfill material (17) in Caletka is opposite to the relationship between a second resin and a first resin required by the instant claimed invention.

Thus, it is submitted that neither claim 1 nor claim 7 or any of the claims directly or indirectly dependent on claim 1 or claim 7, as the case may be can be said to be obvious from Caletka.

Having dealt with all the objections raised by the Examiner, the Application is believed to be in order for allowance. Early and favorable action is respectfully requested.

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account Number 08-1391.

Respectfully submitted,



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